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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
SPECIFICATION FOR
SMITH'S FLATTERS
(*First Revision*)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR SMITH'S FLATTERS

(First Revision)

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Indian Standard
SPECIFICATION FOR
SMITH'S FLATTERS
(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 11 January 1968, after the draft finalized by the Hand Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 This standard was originally issued in 1956. The present revision has been taken up to express the dimensions only in metric units rationalized to the extent practicable.

0.3 Flatters are being produced in India in many conventional sizes and shapes. The materials used also differ from manufacturer to manufacturer. This standard has, therefore, been prepared with a view to regulating the quality of indigenous products.

0.4 This standard specifies three types of flatters commonly used by metal workers. Type A is fitted with a wooden handle while Types B and C are used in conjunction with suitable tongs, clamps or other holding devices. It is recommended that purchasers should clearly state in their enquiry and order their specific requirements by reference to the types and sizes in this standard.

0.5 In the preparation of this standard, assistance has been derived from Specification No. IND/GS/443 'Flutter head', issued by the Ministry of Defence.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for smith's flatters.

*Rules for rounding off numerical values (*revised*).

2. TYPES AND SIZES

2.1 Smith's flatters shall be of the following types and sizes:

<i>Type</i>	<i>Size</i> mm	<i>Fig.</i>
A	50, 65 and 80	1
B	50 and 80	2
C	45	3

3. MATERIAL

3.1 Flatter heads shall be manufactured from steel conforming to T60 of Schedule VI of IS : 1570-1961* with a maximum phosphorus and sulphur content of 0.05 percent each or from steel having the following chemical composition:

<i>Constituent</i>	<i>Percent</i>
Carbon	0.55 to 0.65
Manganese	0.40 to 0.75
Phosphorus	0.05, <i>Max</i>
Sulphur	0.05, <i>Max</i>
Silicon	0.35, <i>Max</i>

4. HARDNESS

4.1 Working faces of flatters shall have a hardness of 450 to 550 *HV* (see IS : 1501-1959†) or its equivalent in other scales.

4.2 For the determination of hardness, any recognized form of hardness tester may be used.

5. DIMENSIONS

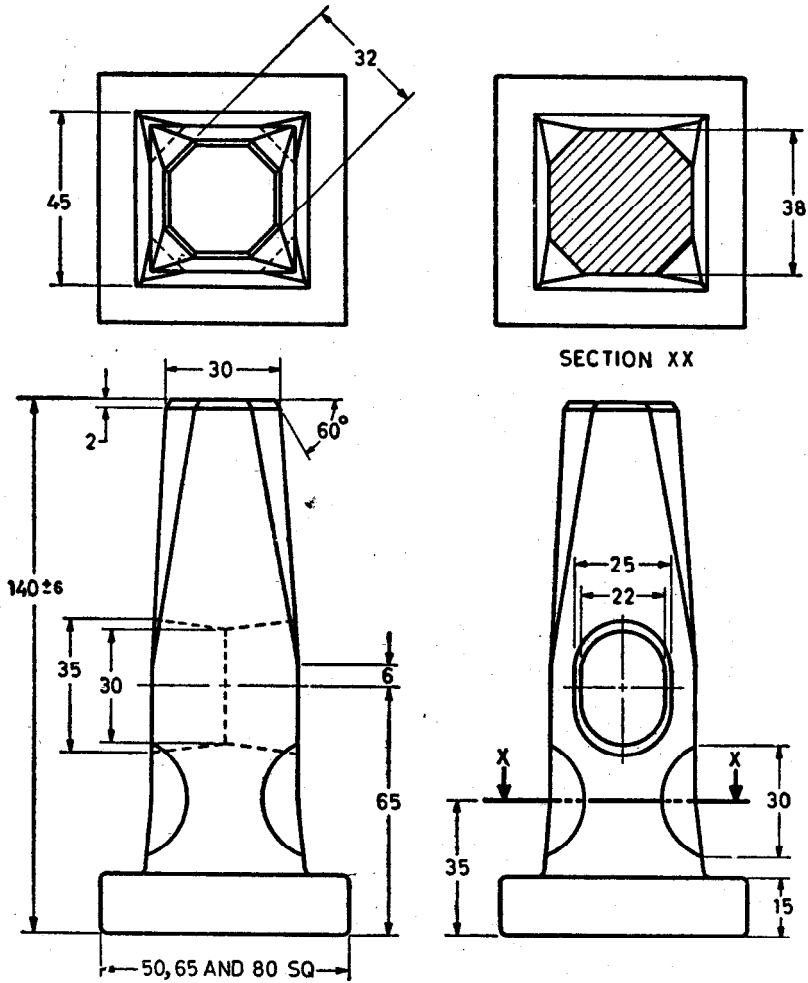
5.1 The main dimensions of the flatters shall be as shown in Fig. 1 to 3. Flatters with slightly different dimensions may be accepted subject to prior agreement between the purchaser and the supplier.

6. DEVIATIONS

6.1 Permissible deviations on dimensions shall be as indicated in the relevant figures. Deviation on other dimensions shall be in accordance with the best forging practice and shall not, in any case, exceed ± 1 mm.

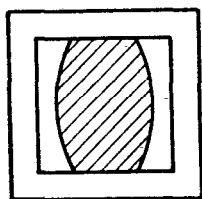
*Schedules for wrought steels for general engineering purposes.

†Method for Vickers hardness test for steel.

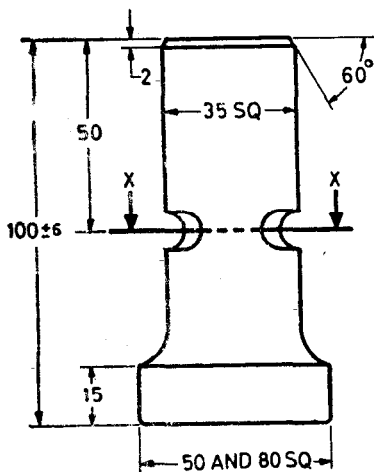


All dimensions in millimetres.

FIG. 1 DIMENSIONS FOR FLATTERS, TYPE A

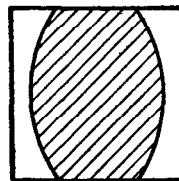


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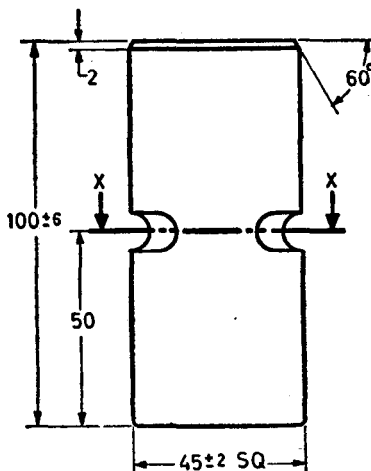


All dimensions in millimetres.

FIG. 2 DIMENSIONS FOR FLATTERS, TYPE B



SECTION XX



All dimensions in millimetres.

FIG. 3 DIMENSIONS FOR FLATTERS, TYPE C

7. HANDLES

7.1 When the handles are required to be supplied with flatters of Type A, they shall conform to requirements of those of class I as specified in IS: 620-1965*. They shall be shaped, before fitting, to suit the eyes of flatters, Type A.

8. MANUFACTURE

8.1 Flatters shall be soundly forged to the shape in one piece. The eye in flatters of Type A shall be correctly shaped, central and oval, and shall be drifted from both sides to leave a central waist.

*General requirements for wooden tool handles (second revision).

8.2 The notches on flatters of Types B and C shall be well made, square with respect to the longitudinal axis and situated central to the length of the flatter. The working faces shall be properly and evenly hardened and tempered.

9. WORKMANSHIP AND FINISH

9.1 Flatters shall be free from flaws, seams, scales, pits, burrs, brittleness and other defects. The eye, in case of flatters of Type A, shall be free from sharp edges.

9.2 Flatters shall be finished smooth with working faces flat and finished bright.

10. DESIGNATION

10.1 Flatters shall be designated by:

- a) commonly used name,
- b) type,
- c) nominal size, and
- d) number of this standard.

Example:

A smith's flatter, Type A of nominal size 50 mm shall be designated as:

Smith's Flatter A50 IS : 846

11. SUPPLY OF SMITH'S FLATTERS

11.1 General requirements relating to supply of smith's flatters shall conform to IS : 1387-1959*.

12. PRESERVATIVE TREATMENT

12.1 Flatters shall be coated with a suitable anti-corrosive paint, when required by the purchaser.

13. MARKING

13.1 Flatters shall be clearly and legibly stamped with the manufacturer's name or initials and/or recognized trade-mark, type, and size. When specifically required by the purchaser, the year of manufacture shall also be marked.

*General supply conditions of metal and metal products.

13.1.1 Flatters may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

14. PACKING

14.1 Flatters shall be securely packed in suitable packing boxes of size convenient for handling in transit and as specified by the purchaser. Each size of flatters shall be kept separate when packed, and a package shall contain flatters of only one type.

15. SAMPLING

15.1 Unless otherwise agreed to between the supplier and the purchaser, the sampling plan as given in Appendix A shall be followed.

16. MECHANICAL TEST

16.1 The flatter shall be held with its working face on a mild steel plate 6 mm thick placed on an anvil. Five full blows shall be struck on the top of the flatter with a 3.5-kg sledge hammer. The flatter shall not show any sign of damage or distortion after the test.

A P P E N D I X A

(Clause 15.1)

SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY

A-1. SCALE OF SAMPLING

A-1.1 Lot — In any consignment all the smith's flatters of the same type and size manufactured under essentially similar conditions of manufacture shall constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of this specification, tests shall be carried out for each lot separately. The number of smith's flatters to be selected at random for this purpose shall be in accordance with col 1 and 2 of Table 1.

TABLE 1 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

(Clauses A-1.2, A-1.3, A-2.1.1 and A-2.2)

LOT SIZE	FOR HARDNESS, DIMENSIONS, WORKMANSHIP AND FINISH		FOR MECHANICAL TEST, SUB-SAMPLE SIZE
	Sample Size	Permissible No. of Defectives	
N	n		
(1)	(2)	(3)	(4)
Up to 25	3	0	2
26 „ 50	5	0	2
51 „ 100	8	0	3
101 „ 150	13	1	4
151 „ 300	20	1	5
301 and above	32	2	8

A-1.3 The flatters shall be selected at random and to ensure the randomness of selection, random number tables shall be used. If the tables are not available the following procedure is recommended for use:

Starting from any flatter in a lot, count them in one order as 1, 2, 3,....., up to r and so on where r is the integral part of N/n (N being the lot size and n the sample size indicated in col 2 of Table 1). Every r th smith's flatter thus counted shall be selected to constitute the sample.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 The smith's flatters selected according to **A-1.3** shall be examined for hardness (*see 4*), dimensions (*see 5*), and workmanship and finish (*see 9*). Any flatter failing to meet the requirements of any one or more of the characteristics shall be considered defective.

A-2.1.1 If the number of defective flatters in the sample is less than or equal to the corresponding permissible number of defectives given in col 3 of Table 1, the lot shall be declared conforming to the characteristics mentioned in **A-2.1**.

A-2.2 From the lots found satisfactory in accordance with **A-2.1.1**, a sub-sample of the size indicated in col 4 of Table 1 shall be selected and subjected to mechanical test (*see 16*).

A-2.2.1 If all the flatters subjected to mechanical test satisfy the necessary requirements, the lot shall be declared conforming to the requirements of this standard; otherwise not.